PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-027344
(43)Date of publication of application : 05.02.1993

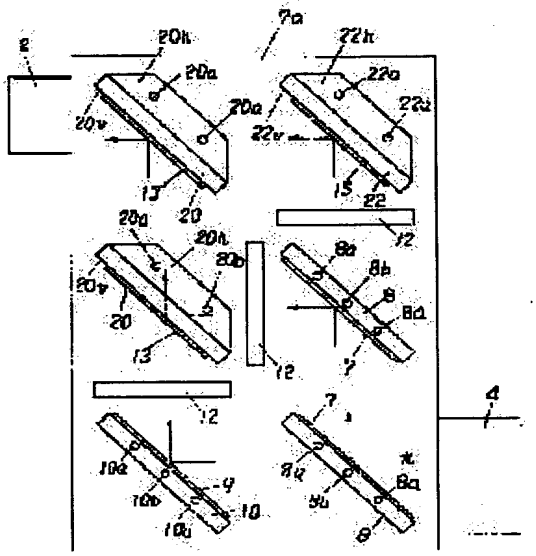
)Int.CI. G03B 33/12
G02B 7/198
G03B 21/00

)Application number : 03-186130
)Date of filing : 25.07.1991

(71)Applicant : MATSUSHITA ELECTRIC IND CO LTD
(72)Inventor : ARIGA SAKAE

) LIQUID CRYSTAL VIDEO PROJECTION TYPE DISPLAY DEVICE

)Abstract:
RPOSE: To prevent the distortion of a video reflected on a mirror which aused by the deformation of a mirror mounting frame by fastening ews at the time of mounting a mirror with a chassis as to a mirror unting struc ture for a liquid crystal video projection device.
NSTITUTION: The color resolution for light emitted from a lamp 4 is formed by a color resolving dichroic mirror 7 on a supporting frame 8 a back mirror 9 on a supporting frame 10, and then the light is ected so as to be made incident on a liquid crystal panel 12. The color thesis for light emitted from the liquid crystal panel 12 is performed by olor synthesizing dichroic mirror 13 on a canti-lever supporting frame 22 a front surface mirror 15 on a canti-lever supporting frame 22 again, then, it is projected on a screen by a projection lens 2. By having a iti-lever supporting frame structure in such a way, the stress is not lied to mirror mounting parts 20v and 22v at the time of fastening the ews on the side of a side plate 7b, so that the surface accuracy of the ror can be kept constant.



GAL STATUS
ate of request for examination] 12.11.1996
ate of sending the examiner's decision of rejection] 22.08.2000
nd of final disposal of application other than the aminer's decision of rejection or application converted istration]
ate of final disposal for application]
atent number]
ate of registration]
umber of appeal against examiner's decision of ection]
ate of requesting appeal against examiner's decision of ection]
ate of extinction of right]

)TICES *

n Patent Office is not responsible for any
ges caused by the use of this translation.

is document has been translated by computer. So the translation may not reflect the original precisely.
** shows the word which can not be translated.
the drawings, any words are not translated.

.IMS

.m(s)]
.m 1] The lamp which emits a parallel ray, and light Red, blue, the color-separation dichroic mirror for carrying out
:ctrum green, and a rear-face mirror, The liquid crystal panel which receives the light from said lamp for a
:hing element in preparation for each picture element, The color composition dichroic mirror and front surface
)r for compounding the output light from said liquid crystal panel, the frame of the shape of a cantilever which
orts said color composition dichroic mirror and front surface mirror, and the projection lens which projects said
)ounded output light on a screen -- **** -- the liquid crystal image projection arrangement characterized by things.

---

nslation done.]

)TICES *

is document has been translated by computer. So the translation may not reflect the original precisely.
** shows the word which can not be translated.
the drawings, any words are not translated.

'AILED DESCRIPTION

ailed Description of the Invention]
'1]
ustrial Application] This invention relates to the liquid crystal image projection arrangement in which the mirror attached with a sufficient precision by the chassis.
'2]
ɔcription of the Prior Art] In recent years, big spread is expected from simple [of installation of red and the liquid tal image projection arrangement which compounds each green and blue image by the mirror, and is projected on a ɐn with one projection lens]. An example of the conventional liquid crystal image projection arrangement tioned above while referring to the drawing below is explained. Drawing 3 and drawing 4 show the optical unit of ɔonventional liquid crystal image projection arrangement. A projection lens for 2 to make an image project to a en (not shown) in drawing, A color-separation dichroic mirror for the lamp with which 4 emits a parallel ray, the plate with which 6a and 6b are supporting optical system, and 7 to carry out the spectrum of the light emitted from lamp 4, and 8 are the support frames for supporting the color-separation dichroic mirror 7. 8a and 8b are installation ws, and the support frame 8 is attached in side plates 6a and 6b by installation bis-8a and 8b. A rear-face mirror for reflect the light from said lamp 4 and 10 are the support frames for supporting the rear-face mirror 9, 10a and 10b nstallation screws, and the support frame 10 is attached in side plates 6a and 6b by installation bis-10a and 10b. A ır composition dichroic mirror for the liquid crystal panel with which 12 receives the light from a lamp 4 for a ching element in preparation for each picture element, and 13 to compound the output light from a liquid crystal ɐl 12, and 14 are the support frames for supporting the color composition dichroic mirror 13, 14a and 14b are allation screws, and the support frame 14 is attached in side plates 6a and 6b by installation bis-14a and 14b. A front ace mirror for 15 to reflect the output light from a liquid crystal panel 12 and 16 are the support frames for ɔorting a front surface mirror 15, 16a and 16b are installation screws, and the support frame 16 is attached in side es 6a and 6b by installation bis-16a and 16b. About the conventional liquid crystal image projection arrangement ɜtituted as mentioned above, the actuation is explained below. It is decomposed and reflected by the color-separation ıroic mirror 7 of the support frame 8, and the rear-face mirror 9 of the support frame 10, and the light emitted from lamp 4 carries out incidence of the color to a liquid crystal panel 12 in them. A color is again compounded by the ıt surface mirror 15 of the color composition dichroic mirror 13 of the support frame 14, and the support frame 16, the light which came out of the liquid crystal panel 12 is projected on a screen (not shown) with the projection lens

)3]
)blem(s) to be Solved by the Invention] However, in case the opposite side of the support frames 14 and 16 is ched in side plate 6b after it attached in side plate 6a and having been attached by bis-14a and 16a, and it fixes by 14b and 16b, the support frames 14 and 16 may be made to deform the support frames 14 and 16 with a figuration like such before by how to bind a screw tight. The color composition dichroic mirror 13 and front surface ror 15 which are attached in the support frames 14 and 16 by that cause were ****(ed), and it had the trouble that it ame impossible to also distortion convergence adjust an image.
04] This invention solves the above-mentioned technical problem, and in case the support frame of a mirror is ched, it aims at offering the support frame which is not ****** about a mirror.
05]
ɐans for Solving the Problem] In order to attain the above-mentioned purpose, this invention the lamp which emits a allel ray, and light Red, blue, and the color-separation dichroic mirror and rear-face mirror for carrying out a ctrum green, The liquid crystal panel which receives the light from said lamp for a switching element in preparation

ıch picture element, The color composition dichroic mirror and front surface mirror for compounding the output from said liquid crystal panel, It has the frame of the shape of a cantilever which supports said color composition oic mirror and front surface mirror, and the projection lens which projects said compounded output light on a n, and stress is not applied to said color composition dichroic mirror and front surface mirror at the time of an nbly, but it is made for an image not to be distorted.

5]

ction] By the above-mentioned configuration, this invention can prevent generating of distortion of the support e on an installation screw.

7]

mple] Hereafter, it explains, referring to drawing 1 - drawing 2 about one example of this invention. In drawing 1 lrawing 2 , 20 is the cantilevered suspension frame of the L form which supports the color composition dichroic or 13, 20a is an installation screw, 20h is the installation section to a side plate, and 20v is the mirror installation on. 20h of side plate installation sections of the cantilevered suspension frame 20 is attached in side plate 7a by llation bis-20a in the shape of a cantilever. 22 is the cantilevered suspension frame of the L form which supports a surface mirror 15, 22a is an installation screw, 22h is the side plate installation section, and 22v is the mirror llation section. 22h of installation sections to the side plate of the cantilevered suspension frame 22 is attached in plate 7a by installation bis-22a in the shape of a cantilever. About the conventional liquid crystal image projection gement constituted as mentioned above, the actuation is explained below. It is decomposed and reflected by the -separation dichroic mirror 7 of the support frame 8, and the rear-face mirror 9 of the support frame 10, and the emitted from the lamp 4 carries out incidence of the color to a liquid crystal panel 12 in them. A color is again ounded by the front surface mirror 15 of the color composition dichroic mirror 13 of the cantilevered suspension e 20, and the cantilevered suspension frame 22, and the light which came out of the liquid crystal panel 12 is cted on a screen (not shown) with the projection lens 2. As mentioned above, by making it a cantilevered ension frame, since it is certainly fixed to side plate 7a side plate installation sections [20h and 22h] in respect of g large, it attaches, and it appears in precision and a target on the strength enough, and, for a certain reason, the side 7b side was it less necessary to be fixed. In order not to apply stress by that cause to the mirror installation sections and 22v in the case of the bis-bundle by the side of side plate 7b, the profile irregularity of a mirror is maintainable.

8] Furthermore, by finishing correctly the squareness of the installation section to the side plate of the cantilevered ension frames 20 and 22, and the mirror installation section, the configuration which attached a side plate and 7a was made into datum level forms an optical path with a very high precision, and assembly nature is raised easily.

9] In addition, although the example of L form was described as a cantilever-like frame appearance, it cannot be emphasized that appearances are arbitration, such as T form and a flat form, specially.

0]

ct of the Invention] The lamp which emits a parallel ray according to this invention so that clearly from the above ıple, Light Red, blue, and the color-separation dichroic mirror and rear-face mirror for carrying out a spectrum n, The liquid crystal panel which receives the light from said lamp for a switching element in preparation for each ıre element, The color composition dichroic mirror and front surface mirror for compounding the output light from liquid crystal panel, It has the frame of the shape of a cantilever which supports said color composition dichroic or and front surface mirror, and the projection lens which projects said compounded output light on a screen. Stress t applied to said color composition dichroic mirror and front surface mirror at the time of an assembly, but an ge can be prevented from being distorted, and the liquid crystal image projection arrangement which convergence stment tends [very] to perform can be offered.

---

nslation done.]

)TICES *

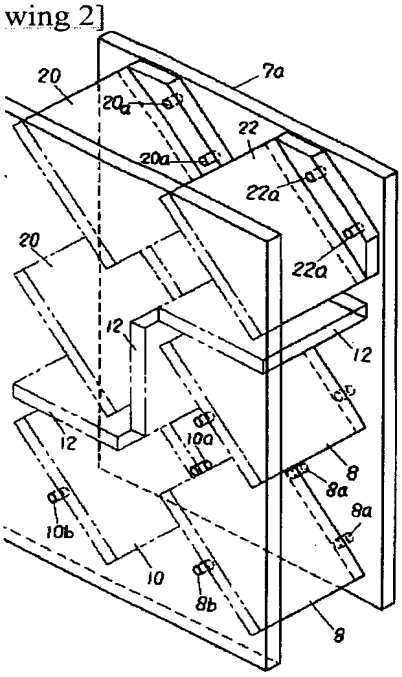
n Patent Office is not responsible for any
.ges caused by the use of this translation.

is document has been translated by computer. So the translation may not reflect the original precisely.
** shows the word which can not be translated.
the drawings, any words are not translated.

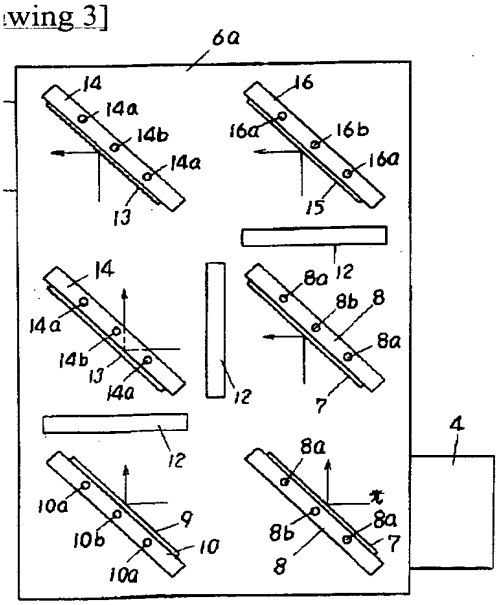
.WINGS

---

wing 2]

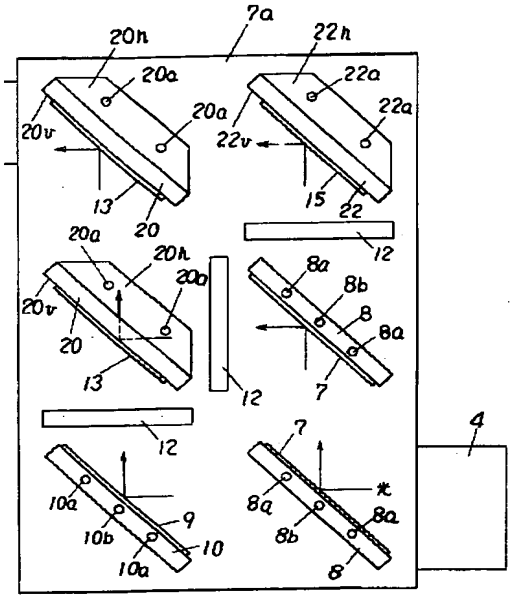


wing 3]

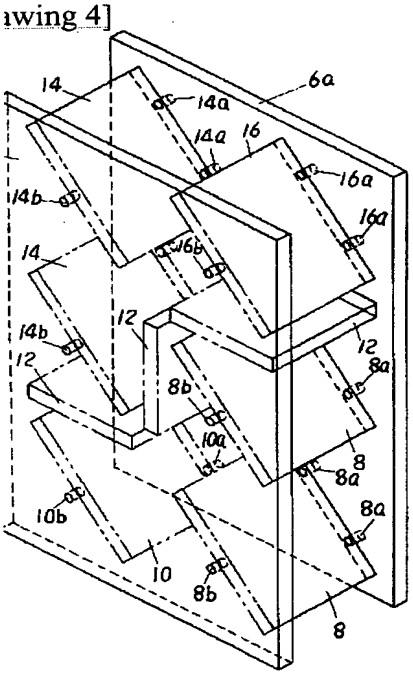


awing 1]

2 ランプ
4 投写レンズ
7 色分解
ダイクロイックミラー
9 裏面鏡
12 液晶パネル
13 色合成
ダイクロイックミラー
15 表面鏡
20,22 片持ち支持フレーム



awing 4]



anslation done.]